Air Quality Permitting
Technical analysis

March 5, 2003

Tier II Operating Permit No. T2-020425

Lamb Weston Inc.
Twin Falls, Idaho

AIRS Facility No. 083-00062

Prepared by:

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Permit Writer

Air Quality Division

FINAL REVISED TIER II OPERATING PERMIT

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CO	carbon monoxide
Department	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
LW	Lamb Weston Inc.
NO_X	nitrogen oxides
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers or less
PSD	Prevention of Significant Deterioration
PTC	permit to construct
SIP	State Implementation Plan
SO_2	sulfur dioxide
T/yr	tons-per-year
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01, Section 404.04, *Rules for the Control of Air Pollution in Idaho*. This technical memorandum is an addendum to the Departments May 22, 2002 technical memorandum. For reference, the May 22, 2002 technical memorandum is included as the appendix of this document.

2. PROJECT DESCRIPTION

Lamb Weston, Inc. (LW) proposes to revise their May 24, 2002 Tier II operating permit by changing the due dates of the reporting requirements in Permit Conditions 2.10 and 2.15. Specifically, LW proposes to change the due dates from June 30 and December 31 of each year to January 31 and July 31 of each year. This change makes the due date for all required reporting the same for EPA and the Department.

This permitting action does not result in the increase of any regulated air pollutant; therefore, the revised permit does not require an opportunity for public comment as described by IDAPA 58.01.01.404.04 and 404.01.c.

3. FACILITY DESCRIPTION

Lamb Weston, Inc. processes raw potatoes into frozen, fried, hash brown, mashed, and special potato products for consumer sales.

4. SUMMARY OF EVENTS

December 12, 2002 The Department received an application from LW to revise their May 24, 2002 Tier II operating permit.

February 3, 2003 The Tier II operating permit application was determined complete.

5. PERMIT HISTORY

October 9, 2002 LW was issued a PTC exemption concurrence for an air-handling unit.

May 24, 2002 LW was issued Tier II operating permit No. 083-00062 that replaced Tier II operating permit No. 083-00062 issued October 17, 2000.

6. TECHNICAL ANALYSIS

Emission Estimates

This project is to revise the reporting requirements. No emissions were estimated.

Modeling

No modeling was required for this project.

Area Classification

The facility is located in Twin Falls County, which is located in AQCR 63, UTM Zone 11. The area is classified as attainment or unclassifiable for all criteria air pollutants.

Facility Classification

The facility is classified as a synthetic minor facility because its potential to emit is limited below 100 T/yr of any regulated pollutant. The SIC code is 2099.

7. PERMIT REQUIREMENTS

Permit Condition 2.10. Specifies monitoring and recordkeeping of fuel consumption monthly and annually.

Permit Condition 2.11. Specifies NO_x and SO_2 emissions reporting be submitted on or before January 31 and July 31 of each year.

8. AIRS INFORMATION

This permitting action does not affect the facility-wide pollutant information contained in the AIRS database. Please refer to the May 22, 2002 technical memorandum for the current AIRS information.

9. FEES

This facility is not a major facility as defined by IDAPA 58.01.01.008.10; therefore, registration and registration fees, in accordance with IDAPA 58.01.01.387, do not apply. In accordance with IDAPA 58.01.01.407, no Tier II operating permit processing fees are required for this permitting action.

10. RECOMMENDATIONS

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends the Department issue revised Tier II Operating Permit No. 083-00062 to Lamb Weston, Inc.

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APPENDIX

Lamb Weston, Inc., Twin Falls

Tier II Operating Permit No. T2-020425

March 5, 2003

AIR QUALITY PERMITTING
TECHNICAL MEMORANDUM

Tier II Operating Permit No. 083-00062

LAMB WESTON, INC.
TWIN FALLS, IDAHO

Prepared by:

Stephen Coe
Permit Writer

Project No. T2-010431

May 22, 2002

FINAL PERMIT

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LIST OF ACRONYMS

ACFM	Actual Cubic Feet Per Minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
BACT	Best Available Control Technology
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
dscf	Dry Standard Cubic Feet
EF	Emission Factor
EPA	United States Environmental Protection Agency
gpm	Gallons Per Minute
gr	Grain (1 lb = 7,000 grains)
HAPs	Hazardous Air Pollutants
IC	Integrated Chip
IDAPA	Idaho Administrative Procedures Act
km	Kilometer
lb/hr	Pound Per Hour
MACT	Maximum Available Control Technology
MMBtu	Million British thermal units
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
NSPS	New Source Performance Standards
O_3	Ozone
OP	Operating Permit
PM	Particulate Matter
PM_{10}	Particulate Matter with an Aerodynamic Diameter of 10 Micrometers or Less
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration
PTC	Permit To Construct
PTE	Potential To Emit
SCC	Source Classification Code
scf	Standard Cubic Feet
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TSP	Total Suspended Particulates
T/yr	Tons Per Year
µm	Micrometers
VOC	Volatile Organic Compound

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01, Section 404.04 (*Rules for the Control of Air Pollution in Idaho*) for Tier II operating permits. This technical memorandum serves as an addition to the technical memorandum dated June 16, 2000, included in Appendix C.

PROJECT DESCRIPTION

Lamb Weston is proposing to install a water heater, which will utilize the waste gas from an anaerobic digester, at its Twin Falls facility (856 Russet Street, Twin Falls). Lamb Weston is also proposing to install the capability to burn both 0.05% sulfur diesel and cooking oil as backup fuels in its boilers. Lamb Weston would like to remove the New Source Performance Standards size restriction that limits boiler No. 1 below 100 million British thermal units (MMBtu) per hour and rate the boiler at design specifications. Lamb Weston is proposing to operate the facility on an ongoing basis.

Lamb Weston requested the water heater portion of the application be processed expeditiously as an energy project consistent with Governor Kempthorne's Directive 2001-02, dated February 22, 2001. The directive instructs the Idaho Department of Environmental Quality (DEQ) to expedite review of applications for energy generation projects.

SUMMARY OF EVENTS

On September 27, 2001, DEQ received an application from Lamb Weston for installation of a water heater, which will burn biogas from an anaerobic digester. On October 26, 2001, the application was determined complete. On November 9, 2001, the consent order for the installation of a water heater utilizing waste biogas was signed on December 18, 2002, the draft permit was issued to the facility on January 7, 2002, the facility responded on February 19, 2002, the proposed permit was issued for public comment on April 2, 2002, the public comment period ended on May 1, 2002, the only comments received were from the facility.

DISCUSSION

1. Equipment Listing

   The installation will include an American Heating Company water heater, model number AHC-1500, with a rated heat input capacity of 19 MMBtu/hr. The installation of the equipment necessary to burn both 0.05% sulfur diesel and cooking oil as backup fuels in boilers No. 1, No. 2, and No. 3. Boiler No. 1 is currently restricted below 100 MMBtu heat input per hour; the rated capacity of boiler No. 1 is 180 MMBtu heat input per hour.

2. Emission Estimates

   The applicant provided emissions from the facility using emissions estimated from an analysis of the actual biogas and AP-42 values. The emissions in Table 1 are expected if the facility operates at maximum capacity for 8,760 hours per year (i.e., at the potential to emit). Emission calculations are provided in Appendix A.

Table 1. Potential Facility Emissions.

Pollutant	Emission Rate	
	lb/hr[1]	T/yr[2]
VOCs[3] (as Total HC[4])	2.6	6.1
CO[5]	31	54
NO_2[6]	62	99
PM_{10}[7]	6.3	11
SO_2[8]	36	99

[1]Pounds per hour
[2]Tons per year
[3]Volatile organic compounds
[4]Hydrocarbons
[5]Carbon monoxide
[6]Nitrogen oxides
[7]Particulate matter
[8]Sulfur dioxide

3. Modeling

The applicant modeled emissions using ISCST3 Version 00101 and regulatory default options. Surface meteorological data for Pocatello with mixing height data for Boise from the SCRAM Web site was used for the modeling. Pocatello surfaces data and Boise mixing height data for 1987–1991 was used because it is the most recent and applicable data available.

Estimated concentrations from the proposed project were combined with background concentrations to determine the total ambient concentrations for each pollutant. When running all sources at the facility at maximum capacity, modeling predicts none of the criteria pollutants will exceed their respective ambient air quality standards. In addition, toxic air pollutants from the facility will not exceed any Acceptable Ambient Concentration (AAC). Therefore, the project is expected to be in compliance with all ambient air quality standards. Modeling results are provided in Appendix B.

4. Facility Classification

This facility is a potato product manufacturer, Standard Industrial Classification code 2099. Per IDAPA 58.01.01.006.55 a major facility is any facility, which emits, or has the potential to emit, 100 T/yr or more of any regulated air pollutant. This facility is adopting production/operating restrictions, which keeps the facility below the major facility threshold. The facility is not a major facility and is considered a synthetic minor facility since it chooses to stay under the major threshold.

5. Area Classification

Twin Falls is located in Twin Falls County, Air Quality Control Region 63, UTM Zone 11. Twin Falls County is designated as unclassifiable for all criteria air pollutants.

6. Regulatory Review

IDAPA 58.01.01.201 Permit to Construct Required

A permit to construct will be required for this source. The Tier II operating permit will contain PTC requirements. A PTC will not be specifically issued, since the Tier II permit will address all PTC issues.

IDAPA 58.01.01.210 Demonstration of Preconstruction Compliance with Toxic Standards

Toxic emissions were estimated by the applicant using AP-42 or biogas analysis emission factors. The toxic emissions do not exceed their AACs in IDAPA 58.01.01.586.

IDAPA 58.01.01.401 Tier II Operating Permit

The use of a potential to emit limitation to exempt the facility from Tier I permitting requirements is authorized.

IDAPA 58.01.01.403 Permit Requirements for Tier II Sources

Tier II sources must comply with all applicable local, state, or federal emission standards. The source will not cause or significantly contribute to a violation of any ambient air quality standard.

IDAPA 58.01.01.404.01(c) Opportunity for Public Comment

An opportunity for public comment shall be provided on Tier II operating permits. Since there is an increase in emissions a public comment period is required.

IDAPA 58.01.01.404.04 Authority to Revise or Renew Operating Permits

The director may approve a revision of any Tier II operating permit or renewal of any Tier II operating permit provided the stationary source or facility continues to meet all applicable requirements of Sections 400 through 406.

IDAPA 58.01.01.406 Obligation to Comply

Receiving a Tier II operating permit shall not relieve any owner or operator of the responsibility to comply with all applicable local, state, and federal rules and regulations.

IDAPA 58.01.01.470 Permit Application Fees for Tier II Permits

Any person applying for a Tier II permit shall pay permit application fees of $500 for each permit requested or amended.

IDAPA 58.01.01.577 Ambient Air Quality Standards for Specific Air Pollutants

Emissions of pollutants listed in IDAPA 58.01.01.577 were shown to be in compliance with the ambient air quality standards. See Appendix B.

IDAPA 58.01.01.625 Visible Emission Limitation

A person shall not discharge any air pollutant into the atmosphere from any point of emission for a period or periods aggregating more than three minutes in any 60-minute period which is greater than 20% opacity.

IDAPA 58.01.01.650 General Rules for the Control of Fugitive Dust

All reasonable precautions shall be taken to prevent the generation of fugitive dust.

40 CFR 60 New Source Performance Standards

40 CFR 60 Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, states: *"The affected facility to which this subpart applies is each steam generating unit that commences construction, modification or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 million Btu/hour)."* Boiler No. 1 was constructed in 1989 and the rated capacity is 180 MMBtu heat input per hour. New Source Performance Standards contained in 40 CFR 60 are applicable for boiler No. 1.

40 CFR 61 and 63 National Emission Standards for Hazardous Air Pollutants and Maximum Achievable Control Technology

No subparts of 40 CFR 61 or 63 are applicable.

7. Permit Requirements

7.1 Emission Limits

Emission limits on specific air pollutants are set at the potential to emit as show in Table II below.

Table 2. Potential Facility Emissions.

Pollutant	Emission Rate	
	lb/hr[1]	T/yr[2]
VOCs[3] (as Total HC[4])	2.6	6.1
CO[5]	31	54
NO_2[6]	62	99
PM_{10}[7]	6.3	11
SO_2[8]	36	99

[1]Pounds per hour
[2]Tons per year
[3]Volatile organic compounds
[4]Hydrocarbons
[5]Carbon monoxide
[6]Nitrogen oxides
[7]Particulate matter
[8]Sulfur dioxide

7.2 Operating Requirements

Combined NO_x emissions from the entire facility shall not exceed 99 tons/year. The NO_x emissions shall be calculated monthly for the previous 12 months. The NO_X calculations shall be made using the following table:

Table 3. NO_x Emissions Calulations

Source	Fuel Usage (previous 12 months)	Emission Factor	Emissions
Boiler 1 Natural Gas	MMCF x	83.73 lb/MMCF =	Lbs
Rest of Plant Natural Gas	MMCF x	100 lb/MMCF =	Lbs
Waste Gas	MMCF x	100 lb/MMCF =	Lbs
Total Diesel	Gallons x	20 lb/1000 gal =	Lbs
Total Vegetable Oil	Gallons x	25 lb/1000 gal =	Lbs
Total =			Lbs
			Tons

Combined SO_2 emissions from the entire facility shall not exceed 99 tons/year. The SO_2 emissions shall be calculated monthly for the previous 12 months. The SO_2 calculations shall be made using the following table:

Table 4. SO_2 Emissions Calulations

Source	Fuel Usage (previous 12 months)	Emission Factor	Emissions
Boiler 1 Natural Gas	MMCF x	0.6 lb/MMCF =	Lbs
Rest of Plant Natural Gas	MMCF x	0.6 lb/MMCF =	Lbs
Waste Gas[1]	MMCF x	1015 lb/MMCF =	Lbs
Total Diesel	Gallons x	7.1 lb/1000 gal =	Lbs
Total Vegetable Oil	Gallons x	0.11 lb/1000 gal =	Lbs
Total =			Lbs
			Tons

[1]Waste gas emission factor needs to be assured. 1,015 lb/MMCF is based on an H_2S concentration of 6,100 ppm by volume.

8. Permit Coordination

Currently, Lamb Weston operates one other permitted facility within the state of Idaho, located in American Falls.

9. Aerometric Information Retrieval System (AIRS) Information

AIRS/AFS FACILITY-WIDE CLASSIFICATION1 DATA ENTRY FORM

AIR PROGRAM / POLLUTANT	SIP[2]	PSD[3]	NSPS[4] (Part 60)	NESHAP[5] (Part 61)	MACT[6] (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N - Nonattainment
SO_2[7]	SM						U
Nox[8]	SM						U
CO[9]	B						U
PM_{10}[10]	B						U
PT[11]	B						U
VOC[12]	B						U
THAP[13]							
			APPLICABLE SUBPART				
			Db				

[1]AIRS/AFS CLASSIFICATION CODES:
A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
B = Actual and potential emissions below all applicable major source thresholds.
C = Class is unknown.
ND = Major source thresholds are not defined (e.g., radionuclides).
[2]State Implementation Plan
[3]Prevention of Significant Deterioration
[4]New Source Performance Standards
[5]National Emission Standards for Hazardous Air Pollutants
[6]Maximum Achievable Control Technology
[7]Sulfur Dioxide
[8]Nitrogen Oxides
[9]Carbon Monoxide
[10]Particulate matter with an aerodynamic diameter less than or equal to ten micrometers
[11]Particulate
[12]Volatile Organic Compounds
[13]Total Hazardous Air Pollutants

FEES

Fees apply to this facility in accordance with IDAPA 58.01.01.470. The facility is subject to permit application fees for this revised Tier II operating permit of $500.

RECOMMENDATIONS

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends that DEQ issue a final Tier II operating permit to Lamb Weston. An opportunity for public comment on the air quality aspects of the proposed operating permit was provided in accordance with IDAPA 58.01.01.404.01.c. Lamb Weston has paid the required Tier II application fee of $500.

APPENDIX A

Lamb Weston, Twin Falls

Emission Calculations

Lamb-Weston, Twin Falls
Waste Gas and Maximum Natural Gas Calculations

Natural Gas Btu/ft³ = 1,020 Waste Gas Btu/ft³ = 840

Natural Gas

Component	Maximum BTU Heat Input/hr	Natural Gas					
		Full Load Capacity		Maximum Natural Gas per Year			
		MMCF/hr	MMCF/yr	Btu/hr	MMCF/hr	MMCF/yr	Basis
BOILER No. 1	180,000,000	0.1765	1,545.88			1,545.88	Increased Capacity
BOILER No. 2	72,000,000	0.0706	618.35			230.52	Remaining natural gas that can be burned and not exceed 99 tons/yr NO$_x$. This gas could be burned in any fuel burning equipment.
BOILER No.3	36,000,000	0.0353	309.18				
HEATERS & BURNERS	108,800,000	0.1067	934.40			75.00	Tier II Permit
LINE 1 DRYER	36,000,000	0.0353	309.18			64.94	Tier II Permit
LINE 2 PRE DRYER	4,000,000	0.0039	34.35			14.12	Tier II Permit
LINE 4 DRYER	27,500,000	0.0270	236.18			91.76	Tier II Permit
SPECIAL PRODUCTS DRYER	2,000,000	0.0020	17.18			14.82	Tier II Permit
WASTE GAS HEATER	19,000,000	0.0186	163.18	2,000,000	0.0020	17.18	Remaining natural gas capacity when waste gas is burned at capacity
Total		0.457	4,004.69			2,054.23	
Total without Boiler 1		0.299	2621.988			508.35	
Total without Boilers and Waste Gas Heater		0.175	1,531.28			260.65	

Waste Gas

WASTE GAS HEATER	17,000,000	0.0202	177.29			177.29	Waste Gas Capacity

Emission Factors (AP-42 Emission Factors are the most current.)

Waste Gas sampling performed on 2/21/01 showed an average H_2S concentration of 6100 ppm by volume. This was converted to lb/MMCF by MW/385.1 = 6100 x (34.08/385.1) = 540 lb/MMCF H_2S.
It is assumed that all the H_2S is converted to SO_2. The MW ratio of SO_2 to H_2S is 1.88 (64.06/34.08). 540 lb/MMCF x 1.88 = 1015 lb/MMCF SO_2.

	Source	PM lb/MMCF	PM_{10} lb/MMCF	SO_2 lb/MMCF	CO lb/MMCF	NO_x lb/MMCF	VOC lb/MMCF
WASTE GAS	Analysis & AP-42	7.6 AP-42	7.6 AP-42	1015 Analysis	84 AP-42	100 AP-42	5.5 AP-42
BOILER NO. 1	Test & AP-42	7.6 AP-42	7.6 AP-42	0.6 AP-42	33.2 Source Test	83.73 Source Test	5.5 AP-42
OTHER EQUIPMENT	AP-42	7.6	7.6	0.6	84	100	5.5

Emissions

The 20.54 lb/hr SO_2 estimate for waste gas is greater than the maximum 18.5 lb/hr emission estimate shown in the City of Twin Falls Waste Gas Flare Permit to Construct Application

	PM		PM_{10}		SO_2		CO		NO_x		VOC	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Boiler 1	1.34	5.87	1.34	5.87	0.11	0.48	5.86	25.66	14.78	64.72	0.97	4.25
Boiler 2	0.54	0.88	0.54	0.88	0.04	0.07	5.93	9.68	7.06	11.53	0.39	0.63
Boiler 3	0.27		0.27		0.02		2.96		3.53		0.19	
Waste Gas (Waste Gas)	0.15	0.67	0.15	0.67	20.54	89.95	1.70	7.45	2.02	8.86	0.11	0.49
Waste Gas (Natural Gas)	0.01	0.07	0.01	0.07	0.001	0.01	0.16	0.72	0.20	0.86	0.01	0.05
Rest of Plant Natural Gas	1.33	0.99	1.33	0.99	0.10	0.08	14.68	10.95	17.46	13.03	0.96	0.72
Total	3.64	8.48	3.64	8.48	20.81	90.56	31.30	54.46	45.06	99.00	2.64	6.14

Proposed Permit Calculations

	SO_2 Calculations					NO_x Calculations			
		Emission Factor		Emissions			Emission Factor	Emissions	
Boiler 1 Natural Gas for Previous 12 Months	1,545.88 MMCF x	0.6	lb/MMCF =	928	lbs	1,545.88 MMCF x	83.73 lb/MMCF =	129,437	lbs
Rest of Plant Natural Gas for Previous 12 Months	508.35 MMCF x	0.6	lb/MMCF =	305	lbs	508.35 MMCF x	100 lb/MMCF =	50,835	lbs
Waste Gas for Previous 12 Months	177.29 MMCF x	1015	lb/MMCF =	179,891	lbs	177.29 MMCF x	100 lb/MMCF =	17,729	lbs
Diesel Used for Previous 12 Months	Gallons x	7.1	lb/1000 gal =		lbs	Gallons x	20 lb/1000 gal =		lbs
Cooking Oil Used for Previous 12 Months	Gallons x	0.11	lb/1000 gal =		lbs	Gallons x	25 lb/1000 gal =		lbs
			Total =	181,123	lbs		Total =	198,000	lbs
				90.56	tons			99.00	tons

Lamb-Weston, Twin Falls
Diesel Calculations

Proposed Permit Calculations

	SO_2 Calculations					NO_x Calculations				
		Emission Factor		Emissions			Emission Factor		Emissions	
Boiler 1 Natural Gas for Previous 12 Months	0.00 MMCF x	0.6	lb/MMCF =	0	lbs	0.00 MMCF x	83.73	lb/MMCF =	0	lbs
Natural Gas for Previous 12 Months	0.00 MMCF x	0.6	lb/MMCF =	0	lbs	0.00 MMCF x	100	lb/MMCF =	0	lbs
Waste Gas for Previous 12 Months	0.00 MMCF x	1015	lb/MMCF =	0	lbs	0.00 MMCF x	100	lb/MMCF =	0	lbs
Diesel Used for Previous 12 Months	9,900,000 Gallons x	7.1	lb/1000 gal =	70,290	lbs	9,900,000 Gallons x	20	lb/1000 gal =	198,000	lbs
Cooking Oil Used for Previous 12 Months	Gallons x	0.11	lb/1000 gal =	0	lbs	Gallons x	25	lb/1000 gal =	0	lbs
			Total =	70,290	lbs			Total =	198,000	lbs
				35.15	tons				99.00	tons

Calculation of Actual Emissions

	Maximum Btu Heat Input/hr	Diesel			
		Full Load Capacity		Boiler Maximum	Plant Maximum
		1000 gal/hr	1000 gal/yr	1000 gal/yr	1000 gal/yr
Boiler 1	180,000,000	1.31	11,509	9,900	
Boiler 2	72,000,000	0.53	4,604	4,604	
Boiler 3	36,000,000	0.26	2,302	2,302	
Total	288,000,000	2.102	18,415		9,900

Diesel Btu/gal = 137,000

Emission Factors (AP-42 Emission Factors are the most current.)

	% Sulfur	PM lb/1000 gal	PM_{10} lb/1000 gal	SO_2 lb/1000 gal	CO lb/1000 gal	NO_x lb/1000 gal	VOC lb/1000 gal
Boilers	0.05	3.3	2.3	7.1	5	20	0.2

Maximum Plant Emissions Burning Only Diesel in Boilers 1, 2 & 3

	Fuel	PM		PM_{10}		SO_2		CO		NO_x		VOC	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Boilers	Diesel	6.94	16.34	4.84	11.39	14.93	35.15	10.51	24.75	42.04	99.00	0.42	0.99
Waste Heater	Waste Gas	0.15	0.00	0.15	0.00	20.54	0.00	1.70	0.00	2.02	0.00	0.11	0.00
Rest of Plant	Natural Gas	1.33	0.00	1.33	0.00	0.10	0.00	14.68	0.00	17.48	0.00	0.96	0.00
	Total Fuel Burning	8.42	16.34	6.32	11.39	35.57	35.15	26.89	24.75	61.55	99.00	1.49	0.99

Maximum Emissions per Boiler Burning Only Diesel

	PM		PM_{10}		SO_2		CO		NO_x		VOC	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Boiler 1	4.34	16.34	3.02	11.39	9.33	35.15	6.57	24.75	26.26	99.00	0.26	0.99
Boiler 2	1.73	7.60	1.21	5.29	3.73	16.34	2.63	11.51	10.51	46.04	0.11	0.46
Boiler 3	0.87	3.80	0.60	2.65	1.87	8.17	1.31	5.75	5.26	23.02	0.05	0.23

Lamb-Weston, Twin Falls
Cooking Oil Calculations

Proposed Permit Calculations

	SO_2 Calculations					NO_x Calculations				
		Emission Factor		Emissions			Emission Factor		Emissions	
Boiler 1 Natural Gas for Previous 12 Months	0.00 MMCF x	0.6	lb/MMCF =	0	lbs	0.00 MMCF x	83.73 lb/MMCF =		0	lbs
Natural Gas for Previous 12 Months	0.00 MMCF x	0.6	lb/MMCF =	0	lbs	0.00 MMCF x	100 lb/MMCF =		0	lbs
Waste Gas for Previous 12 Months	0.00 MMCF x	1015	lb/MMCF =	0	lbs	0.00 MMCF x	100 lb/MMCF =		0	lbs
Diesel Used for Previous 12 Months	0 Gallons x	7.1	lb/1000 gal =	0	lbs	0 Gallons x	20 lb/1000 gal =		0	lbs
Cooking Oil Used for Previous 12 Months	7,920,000 Gallons x	0.11	lb/1000 gal =	871	lbs	7,920,000 Gallons x	25 lb/1000 gal =		198,000	lbs
			Total =	871	lbs		Total =		198,000	lbs
				0.44	tons				99.00	tons

Calculation of Actual Emissions

		Diesel			
		Full Load Capacity		Boiler Maximum	Plant Maximum
	Maximum Btu Heat Input/hr	1000 gal/hr	1000 gal/yr	1000 gal/yr	1000 gal/yr
Boiler 1	180,000,000	1.38	12,129	7,920	
Boiler 2	72,000,000	0.55	4,852	4,852	
Boiler 3	36,000,000	0.28	2,426	2,426	
Total	288,000,000	2.215	19,407		7,920

Cooking Oil Btu/gal = 130,000

Emission Factors

	Source	PM lb/1000 gal	PM_{10} lb/1000 gal	SO_2 lb/1000 gal	CO lb/1000 gal	NO_x lb/1000 gal	VOC lb/1000 gal
Boilers	Test & AP-42	1.69	1.69	0.11	5	25	0.13

Emissions Burning Only Cooking Oil in Boilers 1, 2 & 3

		PM		PM_{10}		SO_2		CO		NO_x		VOC	
	Fuel	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Boilers	Cooking Oil	3.74	6.69	3.74	6.69	0.24	0.44	11.08	19.80	55.38	99.00	0.29	0.51
Waste Gas Heater	Waste Gas	0.15	0.00	0.15	0.00	20.54	0.00	1.70	0.00	2.02	0.00	0.11	0.00
Rest of Plant	Natural Gas	1.33	0.00	1.33	0.00	0.10	0.00	14.68	0.00	17.48	0.00	0.96	0.00
	Total Fuel Burning	5.23	6.69	5.23	6.69	20.86	0.44	27.46	19.80	74.89	99.00	1.36	0.51

Maximum Emissions per Boiler Burning Only Cooking Oil

	PM		PM_{10}		SO_2		CO		NO_x		VOC	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Boiler 1	2.34	6.69	2.34	6.69	0.15	0.44	6.92	19.80	34.62	99.00	0.18	0.51
Boiler 2	0.94	4.10	0.94	4.10	0.06	0.27	2.77	12.13	13.85	60.65	0.07	0.32
Boiler 3	0.47	2.05	0.47	2.05	0.03	0.13	1.38	6.06	6.92	30.32	0.04	0.16

Lamb-Weston, Twin Falls
Boiler 2 Toxic Air Pollutants

Diesel

Reference: AP-42 Section 1.3 (9/98) Emission Factors for Industrial Boilers Burning Distillate Oil

Heat Input 72 10^6 Btu/hr

Pollutant	Factor lb/10^3 Gal	Factor lb/10^6 Btu	Emission Rate lb/hr	EL lb/hr	Greater Than EL	Toxic Class	Annual Average Emissions lb/hr	Modeled Impact ug/m3	AACC ug/m3	Greater Than AACC
Arsenic		4.00E-06	2.88E-04	1.50E-06	Yes	A	2.88E-04	1.54E-04	2.30E-04	No
Benzene	2.14E-04	1.56E-06	1.12E-04	8.00E-04	No	A				
Beryllium		3.00E-06	2.16E-04	2.80E-05	Yes	A	2.16E-04	2.10E-05	4.20E-03	No
Cadmium		3.00E-06	2.16E-04	3.70E-06	Yes	A	2.16E-04	2.10E-05	5.60E-04	No
Chromium VI (Est. from No. 6 Oil Ratio)		8.80E-07	6.34E-05	5.60E-07	Yes	A	6.34E-05	6.16E-06	8.30E-04	No
Chromium II & III (Est. from No. 6 Oil Ratio)		2.12E-06	1.53E-04	0.033	No	B				
Ethylebenzene	5.36E-05	4.84E-07	3.34E-05	29	No	B				
Formaldehyde	6.10E-02	4.45E-04	3.21E-02	5.10E-04	Yes	A	3.21E-02	3.11E-03	7.70E-02	No
Manganese		6.00E-06	4.32E-04	0.067	No	B				
Mercury		3.00E-06	2.16E-04	0.003	No	B				
Naphthalene	1.13E-03	8.25E-06	5.94E-04	3.33	No	B				
Nickel		3.00E-06	2.16E-04	2.70E-05	Yes	A	2.16E-04	2.10E-05	4.20E-03	No
Toluene	6.20E-03	4.53E-05	3.26E-03	25	No	B				
1,1,1 Trichloroethane (Methyl chloroform)	2.36E-04	1.72E-06	1.24E-04	127	No	B				
o-Xylene	1.09E-04	7.96E-07	5.73E-05	29	No	B				
Polyaromatic hydrocarbon (PAH)	1.17E-05	8.53E-06	6.14E-06	9.10E-05	No	A				
PAH Emission Factor is the sum of the following substances in accordance with IDAPA 58.01.01.586 Table										
Benz(a)anthracene	4.01E-06									
Benzo(b,k)fluoranthene	1.48E-06									
Chrysene	2.38E-06									
Dibenzo(a,h)anthracene	1.67E-06									
Indeno(1,2,3-cd)pyrene	2.14E-06									

Lamb-Weston, Twin Falls
Boiler 1 Toxic Air Pollutants

Natural Gas

Reference: AP-42 section 1.4 (3/98) Emission Factors for Industrial Boilers Burning Natural Gas

Heat Input	180.00 10^6 Btu/hr
Natural Gas	1,020 Btu/cf

Pollutant	Factor		Emission Rate	EL	Greater Than EL	Toxic Class	Annual Average Emissions	Modeled Impact	AACC	Greater Than AACC
	lb/10^6 CF	lb/10^6 Btu	lb/hr	lb/hr			lb/hr	ug/m3	ug/m3	
Arsenic	0.0002	1.96E-07	3.53E-05	1.50E-06	Yes	A	3.53E-05	2.72E-05	2.30E-04	No
Barium	4.40E-03	4.31E-06	7.76E-04	3.30E-02	No	B				
Benzene	0.0021	2.06E-06	3.71E-04	8.00E-04	No	A				
Beryllium	0.000012	1.18E-08	2.12E-06	2.80E-05	No	A				
Cadmium	0.0011	1.08E-06	1.94E-04	3.70E-06	Yes	A	1.94E-04	1.49E-04	5.60E-04	No
Chromium	0.0014	1.37E-06	2.47E-04	0.000	Yes	A	2.47E-04	1.90E-04	8.30E-04	No
Chromium II & III				0	No					
Cobalt	8.40E-05	8.24E-08	1.48E-05	3.30E-03	No	B				
Copper	0.00085	8.33E-07	1.50E-04	0.013	No	B				
Formaldehyde	0.075	7.35E-05	1.32E-02	0.001	Yes	A	1.32E-02	1.02E-02	7.70E-02	No
Hexane (n,hexane)	1.80E+00	1.76E-03	3.18E-01	12.00	No	B				
Manganese	3.80E-04	3.73E-07	6.71E-05	0	No	B				
Mercury	2.60E-04	2.55E-07	4.59E-05	0	No	B				
Molybdenum	1.10E-03	1.08E-06	1.94E-04	1	No	B				
Naphthalene	6.10E-04	5.98E-07	1.08E-04	3.33E+00	No	B				
Nickel	2.10E-03	2.06E-06	3.71E-04	2.70E-05	Yes	A	3.71E-04	2.85E-04	4.20E-03	No
NO		3.60E-02	6.48E+00	6	Yes	B				
Pentane	2.60E+00	2.55E-03	4.59E-01	118	No	B				
Phosphorus	2.10E-03	2.06E-06	3.71E-04	0.007	No	B				
Selenium	2.40E-05	2.35E-08	4.24E-06	0.013	No	B				
Toluene	3.40E-03	3.33E-06	6.00E-04	25	No	B				
Vanadium	2.30E-03	2.25E-06	4.06E-04	0.003	No	B				
Polyaromatic hydrocarbon (PAH)	1.14E-05	1.12E-08	2.01E-06	9.10E-05	No	A				
PAH Emission Factor is the sum of the following substances in accordance with IDAPA 58.01.01.586 Table										
Benz(a)anthracene	1.80E-06	1.76E-09								
Benzo(a)pyrene	1.20E-06	1.18E-09								
Benzo(b)fluoranthene	1.80E-06	1.76E-09								
Benzo(k)fluoranthene	1.80E-06	1.76E-09								
Chrysene	1.80E-06	1.76E-09								
Dibenzo(a,h)anthracene	1.20E-06	1.18E-09								
Indeno(1,2,3-cd)pyrene	1.80E-06	1.76E-09								

Lamb-Weston, Twin Falls
Boiler 1 Toxic Air Pollutants

Diesel

Reference: AP-42 Section 1.3 (9/98) Emission Factors for Industrial Boilers Burning Distillate Oil

Heat Input 180 10^6 Btu/hr

Pollutant	Factor lb/10^3 Gal	Factor lb/10^6 Btu	Emission Rate lb/hr	EL lb/hr	Greater Than EL	Toxic Class	Annual Average Emissions lb/hr	Modeled Impact ug/m3	AACC ug/m3	Greater Than AACC
Arsenic		4.00E-06	7.20E-04	1.50E-06	Yes	A	7.20E-04	6.99E-05	2.30E-04	No
Benzene	2.14E-04	1.56E-06	2.81E-04	8.00E-04	No	A				
Beryllium		3.00E-06	5.40E-04	2.80E-05	Yes	A	5.40E-04	5.25E-05	4.20E-03	No
Cadmium		3.00E-06	5.40E-04	3.70E-06	Yes	A	5.40E-04	5.25E-05	5.60E-04	No
Chromium VI (Est. from No. 6 Oil Ratio)		8.80E-07	1.58E-04	5.60E-07	Yes	A	1.58E-04	1.54E-05	8.30E-04	No
Chromium II & III (Est. from No. 6 Oil Ratio)		2.12E-06	3.82E-04	0.033	No	B				
Ethylebenzene	6.36E-05	4.64E-07	8.36E-05	29	No	B				
Formaldehyde	5.10E-02	4.45E-04	8.01E-02	5.10E-04	Yes	A	8.01E-02	7.79E-03	7.70E-02	No
Manganese		6.00E-06	1.08E-03	0.067	No	B				
Mercury		3.00E-06	5.40E-04	0.003	No	B				
Naphthalene	1.13E-03	8.25E-06	1.48E-03	3.33	No	B				
Nickel		3.00E-06	5.40E-04	2.70E-05	Yes	A	5.40E-04	5.25E-05	4.20E-03	No
Toluene	5.20E-03	4.53E-05	8.15E-03	25	No	B				
1,1,1 Trichloroethane (Methyl chloroform)	2.36E-04	1.72E-06	3.10E-04	127	No	B				
o-Xylene	1.09E-04	7.96E-07	1.43E-04	29	No	B				
Polyaromatic hydrocarbon (PAH)	1.17E-05	8.53E-06	1.53E-05	9.10E-05	No	A				
PAH Emission Factor is the sum of the following substances in accordance with IDAPA 58.01.01.586 Table										
Benz(a)anthracene	4.01E-06									
Benzo(b,k)fluoranthene	1.48E-06									
Chrysene	2.38E-06									
Dibenzo(a,h)anthracene	1.67E-06									
Indeno(1,2,3-cd)pyrene	2.14E-06									

Lamb-Weston, Twin Falls
Boiler 3 Toxic Air Pollutants

Diesel

Reference: AP-42 Section 1.3 (9/98) Emission Factors for Industrial Boilers Burning Distillate Oil

Heat Input 36 10^6 Btu/hr

Pollutant	Factor		Emission Rate	EL	Greater Than EL	Toxic Class	Annual Average Emissions	Modeled Impact	AACC	Greater Than AACC
	lb/10^3 Gal	lb/10^6 Btu	lb/hr	lb/hr			lb/hr	ug/m3	ug/m3	
Arsenic		4.00E-06	1.44E-04	1.50E-06	Yes	A	1.44E-04	1.89E-04	2.30E-04	No
Benzene	2.14E-04	1.56E-06	5.62E-05	8.00E-04	No	A				
Beryllium		3.00E-06	1.08E-04	2.80E-05	Yes	A	1.08E-04	1.05E-05	4.20E-03	No
Cadmium		3.00E-06	1.08E-04	3.70E-06	Yes	A	1.08E-04	1.05E-05	5.60E-04	No
Chromium VI (Est. from No. 6 Oil Ratio)		8.80E-07	3.17E-05	5.60E-07	Yes	A	3.17E-05	3.08E-06	8.30E-04	No
Chromium II & III (Est. from No. 6 Oil Ratio)		2.12E-06	7.63E-05	0.033	No	B				
Ethylebenzene	6.36E-05	4.64E-07	1.67E-05	29	No	B				
Formaldehyde	6.10E-02	4.45E-04	1.60E-02	5.10E-04	Yes	A	1.60E-02	1.56E-03	7.70E-02	No
Manganese		6.00E-06	2.16E-04	0.067	No	B				
Mercury		3.00E-06	1.08E-04	0.003	No	B				
Naphthalene	1.13E-03	8.25E-06	2.97E-04	3.33	No	B				
Nickel		3.00E-06	1.08E-04	2.70E-05	Yes	A	1.08E-04	1.05E-05	4.20E-03	No
Toluene	8.20E-03	4.53E-05	1.63E-03	25	No	B				
1,1,1 Trichloroethane (Methyl chloroform)	2.36E-04	1.72E-06	6.20E-05	127	No	B				
o-Xylene	1.09E-04	7.96E-07	2.86E-05	29	No	B				
Polyaromatic hydrocarbon (PAH)	1.17E-05	8.53E-08	3.07E-06	9.10E-05	No	A				
PAH Emission Factor is the sum of the following substances in accordance with IDAPA 58.01.01.586 Table										
Benz(a)anthracene	4.01E-06									
Benzo(b,k)fluoranthene	1.48E-06									
Chrysene	2.38E-06									
Dibenzo(a,h)anthracene	1.67E-06									
Indeno(1,2,3-cd)pyrene	2.14E-06									

APPENDIX B

Lamb Weston, Twin Falls

Modeling

MODELING REPORT FOR
LAMB-WESTON, TWIN FALLS
WASTE GAS HEATER ADDITION

BACKGROUND

The modeling was carried out to demonstrate that the Lamb-Weston, Twin Falls Plant does not cause a violation of a National Ambient Air Quality Standard with the addition of the Waste Gas Heater. This demonstration is required by Idaho Administrative Code IDAPA 58.01.01.403.02, Permit Requirements for Tier II Sources, NAAQS. Modeling was performed for the criteria pollutants of SO_2, NO_X and PM_{10} and for toxic air pollutants from burning diesel in Boilers 1, 2 and 3 and burning natural gas in Boiler 1.

DISCUSSION OF SOURCE EMISSION INVENTORY

The Twin Falls Lamb-Weston Plant processes potatoes. There are seven product lines producing four different products. Four of the product lines (Lines 1, 2, 4, and special products) produce fried products, two product lines (hashbrown and Line 3) produce hashbrown potatoes, and one product line produces mash potatoes.

With the addition of the waste gas heater, there are 19 fuel burning sources which emit SO_2 and NO_X and 29 point sources that emit PM_{10}. The sources modeled are listed in the Modeled Source Parameters Table in Attachment A, Pages 1 and 2. The fugitive PM_{10} sources of the space heaters, material handling and road emissions were not modeled.

With the exception of the emergency diesels, the modeling used the estimated hourly emissions for each source at its capacity. For NO_X and PM_{10} annual modeling, the average hourly emissions were based on 500 hours of emergency diesel operation per year. For PM_{10} 24-hour modeling, the average hourly emissions were based on 8.5 hours of emergency diesel operations per day. These emissions were the same as used for the Tier II permit modeling.

For modeling the toxic air pollutants which exceeded the IDAPA 58.01.01.585 and 586 screening emission levels (EL), the emission rate for arsenic from diesel burning was modeled for Boilers 1, 2 and 3 and the emission rate for chromium from natural gas burning was modeled for Boiler 1. The other pollutants which exceeded the EL were calculated by their emission ratio to either arsenic or chromium. Since the capacity on natural gas is not changing for Boilers 2 and 3, analysis for toxic air pollutants burning natural gas was not performed for these boilers. To provide more accurate results, the emission rates were multiplied by 10,000, the model was run and the results were divided by 10,000 and compared with the acceptable ambient concentration (AAC) for each pollutant that exceeded the EL.

DESCRIPTION OF THE SOURCE'S ENVIRONMENT

The modeled buildings are shown projected on a 1994 aerial photo of the site in Attachment A, Page 3. The modeled emission points are shown on the Modeled Emission Points Drawing in Attachment A, Page 4. The buildings and roof heights used in the modeling are shown on the Modeled Buildings and Roof Heights Drawing in Attachment A, Page 5.

The terrain surrounding the plant is shown on the Sensitive Receptor Location Map in Attachment A, Page 6.

MODELING METHODOLOGY

The EPA ISCST3, Version 00101, model was used. The model was run using the regulatory default options.

Surface meteorological data for Pocatello with mixing height data for Boise from the EPA SCRAM Website was used for the modeling. Twin Falls is located halfway between Pocatello and Boise. Pocatello surface data and Boise mixing height data for the years 1987-1991 was used because those are the latest years available.

The plant is in a rural area based on the Twin Falls and Filer USGS maps showing less than 50% of the area within 3 kilometers surrounding the plant as being industrial, commercial or compact residential.

The modeling was performed using a 90 meter grid spacing centered on the main plant building. The initial grid array was 2000 meters by 2000 meters. An approximately 30 meter grid spacing was used along the site property lines. Additional points were located at schools, kindergartens, day cares, nursing homes and hospitals within 2.5 miles (4 km) of the plant. The locations of these Sensitive Receptors are shown on the Sensitive Receptor Location Map in Attachment A, Page 6. A grid spacing of 30 meters was used to locate the maximum impacts close to the plant. The grids exclude points within the plant property lines and points which fall within the boundaries of the modeled buildings. All grid points except for the fenceline points correspond to USGS Digital Elevation Model (DEM) data points.

Adjacent buildings modeled included Henningsen Cold Storage, Longview Fibre and The Farm House Collection.

MODELING RESULTS

Maps showing the results of the modeling runs are included in the attachments. The maps show the peak modeled value for each receptor and the year of the peak value. Input files, output files, the meteorological files and the terrain files are on the CDROM at the end of the report.

The modeling results were added to the background concentrations for Twin Falls which were provided by IDEQ to determine if the National Ambient Air Quality Standards (NAAQS) are exceeded. For SO_2 3-hour and 24-hour averages and PM_{10} 24-hour average, the second high for each year was used for comparison with the NAAQS. The following tables show the results of the modeling for each year and compare the results with the NAAQS:

SO_2 Modeling Results

	Annual			24-Hour			3-Hour		
Year	Model ug/m³	Background (18.3 ug/m³) plus Model Results ug/m³	NAAQS ug/m³	2nd High ug/m³	Background (120 ug/m³) plus Model Results ug/m³	NAAQS ug/m³	2nd High ug/m³	Background (374 ug/m³) plus Model Results ug/m³	NAAQS ug/m³
1987	28.2	46.5	80	111.8	231.8	365	569.2	943.2	1300
1988	28.0	46.3	80	138.0	258.0	365	**828.6**	**1202.6**	1300
1989	25.3	43.6	80	**152.8**	**272.8**	365	669.6	1043.6	1300
1990	25.3	43.6	80	130.8	250.8	365	579.1	953.1	1300
1991	**28.4**	**46.7**	80	145.6	265.6	365	567.6	941.6	1300

PM_{10} Modeling Results

	Annual			24-Hour		
Year	Model ug/m³	Background (24.1 ug/m³) plus Model Results ug/m³	NAAQS ug/m³	2nd High ug/m³	Background (94 ug/m³) plus Model Results ug/m³	NAAQS ug/m³
1987	12.1	36.2	50	50.2	144.2	150
1988	**14.6**	**38.7**	50	51.4	145.4	150
1989	11.3	35.4	50	46.3	140.3	150
1990	12.6	36.7	50	49.7	143.7	150
1991	12.7	36.8	50	**55.2**	**149.2**	150

NO_X Modeling Results

	Annual		
Year	Model ug/m³	Background (40 ug/m³) plus Model ug/m³	NAAQS ug/m³
1987	24.4	64.4	100
1988	24.1	64.1	100
1989	21.7	61.7	100
1990	22.5	62.5	100
1991	**24.5**	**64.5**	100

The highest 2nd high 3-hour average SO_2 result was 828.6 $\mu g/m^3$ in 1988. The location is shown in Attachment B, Page 2. Adding the 3-hour background of 374 $\mu g/m^3$ results in an estimated highest 2nd high 3-hour SO_2 impact of 1202.6 $\mu g/m^3$ which is less than the NAAQS limit of 1300 $\mu g/m^3$.

The highest 2nd high 24-hour average SO_2 result was 152.8 $\mu g/m^3$ in 1989. The location is shown in Attachment B, Page 6. Adding the 24-hour background of 120 $\mu g/m^3$ results in an estimated highest 2nd high 24-hour SO_2 impact of 272.8 $\mu g/m^3$ which is less than the NAAQS limit of 365 $\mu g/m^3$.

The highest annual average SO_2 result from the modeling was 28.4 $\mu g/m^3$ for 1991. The location is shown in Attachment B, Page 10. Adding the annual background of 18.3 $\mu g/m^3$ results in an estimated maximum annual impact of 46.7 $\mu g/m^3$ which is less than the NAAQS limit of 80 $\mu g/m^3$.

The highest 2nd high 24-hour average PM_{10} result was 55.2 $\mu g/m^3$ in 1991. The location is shown in Attachment C, Page 1. Adding the 24-hour background of 94 $\mu g/m^3$ results in an estimated highest 2nd high 24-hour impact of 149.2 $\mu g/m^3$ which is less than the NAAQS limit of 150 $\mu g/m^3$.

The highest annual average PM_{10} result from the modeling was 14.6 $\mu g/m^3$ for 1988. The location is shown in Attachment C, Page 6. Adding the annual background of 24.1 $\mu g/m^3$ results in an estimated maximum annual impact of 38.7 $\mu g/m^3$ which is less than the NAAQS limit of 50 $\mu g/m^3$.

The highest annual average NO_X result from the modeling was 24.5 $\mu g/m^3$ for 1991. The location is shown in Attachment D, Page 2. Adding the annual background NO_X of 40 $\mu g/m^3$ results in an estimated maximum annual impact of 64.5 $\mu g/m^3$ which is less than the NAAQS limit of 100 $\mu g/m^3$.

Modeling was also performed for sensitive receptors. The results are shown on the table below and the locations are shown on the maps in the attachments.

Sensitive Receptors

	Maximum ug/m3	Year	Location
SO_2 3-Hour	85.63	1991	Magic Valley Alternative School
SO_2 24-Hour	28.75	1991	Magic Valley Alternative School
SO_2 Annual	6.06	1988	Magic Valley Alternative School
PM_{10} 24-Hour	13.47	1989	Magic Valley Alternative School
PM_{10} Annual	2.72	1990	Magic Valley Alternative School
NO_X Annual	5.45	1988	Magic Valley Alternative School

The modeled toxic air pollutant that came closest to the AAC was arsenic for Boiler 3. The modeled impact was 1.89E-04 $\mu g/m^3$ which is less than the AAC of 2.3E-04 $\mu g/m^3$.

CONCLUSION

The modeling was carried out to demonstrate that the Lamb-Weston, Twin Falls Plant does not cause a violation of a National Ambient Air Quality Standard with the addition of the waste gas heater. This demonstration is required by Idaho Administrative Code IDAPA 58.01.01.403.02, Permit Requirements for Tier II Sources, NAAQS. The modeling results show that a National Ambient Air Quality Standard will not be exceeded. The 24-hour PM_{10} standard of 150 $\mu g/m^3$ is the closest limit approached with a maximum estimated 2nd high concentration of 149.2 $\mu g/m^3$ when a background 24-hour concentration of 94 $\mu g/m^3$ is added to the modeling results of 55.2 $\mu g/m^3$.

Modeling was also performed to demonstrate that the toxic air pollutant limits of IDAPA 58.01.01.585 and 586 were not violated by the additional capability of burning diesel fuel in Boilers 1, 2 and 3 and the increase in capacity to burn natural gas in Boiler 1. The results showed that the acceptable ambient concentrations (AAC) will not be exceeded by these additions.